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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,227	09/24/2003	Harri Valio	944-001.010-3	8209

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WARE FRESSOLA VAN DER SLUYS &
ADOLPHSON, LLP
BRADFORD GREEN BUILDING 5
755 MAIN STREET, P O BOX 224
MONROE, CT 06468

EXAMINER

TRAN, KHANH C

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/671,227	Applicant(s) VALIO, HARRI	
	Examiner Khanh Tran	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendment filed on 12/20/2005 has been entered. Claims 25-34 are pending in this Office action.

Response to Arguments

2. Applicant's arguments, see pages 2-9 of Applicant's Remarks, filed on 12/20/2005, with respect to the rejection(s) of claim(s) 25-34 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Phelts et al. U.S. 6,868,110 B2.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 25-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Phelts et al. U.S. 6,868,110 B2.

Regarding claim 25, Phelts et al. invention is directed to a multipath mitigation method consists of locating a multipath-invariant (MPI) point of an ideal autocorrelation function and measuring the distance between the MPI point and DLL for reducing the effects of multipath in spread spectrum radio communications systems, such as GPS.

In column 8, lines 1-15, Phelts et al. discusses in GPS receivers, a correlation function that is generated between a received signal and a local replica of the received signal. In view of that, the receiver generates a replica code corresponding to the PRN code of the received signal.

In column 10, lines 19-40, Phelts et al. teaches that a multipath-invariant point is used as shown in FIG. 9 to mitigate the effects of multipath on the line-of-sight code tracking performance of the delay-lock loop of the receiver. An ideal distance 106 between a selected multipath-invariant point 108 and, for example, the early correlator 110 of the delay-lock loop is measured on an ideal autocorrelation function generated from the PRN code. In view of that, the selected multipath-invariant point 108 corresponds to the claimed first delay time.

In column 15, lines 40-60; the late correlator is positioned at the multipath-invariant point. As shown in figure 8, the multipath-invariant point can be at point 96d.

In column 12, lines 45-65, Phelts et al. teaches that the location of DLL correlators (early and late correlators) is shifted until the difference between early and late samples of the correlation function is zero.

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Regarding claims 26-27, in column 17, lines 20-40, Phelts et al. discusses the multipath tracking error can be reduced somewhat by decreasing the spacing between the early and late correlators. Multipath effects occur primarily at the late slope of the main lobe, particularly for long-delay multipath. Thus while traditional DLL early and late correlators have spacings of one chip (see figure 2), many current receivers have correlator spacings of 0.5 chips or less.

Regarding claim 28, claim 28 is rejected on the same ground as for claim 25 because of similar scope.

Regarding claims 29-30, claims 29-30 are rejected on the same ground as for claims 26-27 because of similar scope.

Regarding claim 31, claim 31 is rejected on the same ground as for claim 25 because of similar scope.

Regarding claims 32-33, claims 32-33 are rejected on the same ground as for claims 26-27 because of similar scope.

Regarding claim 34, in column 3, lines 5-20, referring to figure 3, Phelts et al. discusses prior art GPS receiver 31 in which the processor 44 computes the early minus late error and determines the required adjustment to the correlators. A digitally-

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controlled (or numerically-controlled) oscillator (DCO) 46 adjusts the phase of the early 48 and late 50 code replicas until the code is correctly tracked.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

El-Tarhuni et al. U.S. Patent 6,201,828 B1 discloses "Fine Estimation Of Multipath Delays In Spread-Spectrum Signals".

Phelts et al. Provisional Application 60/168,472 discloses "Multipath Reduction Technique For Spread-Spectrum Receivers".

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanhcong Tran

03/17/2006

Examiner KHANH TRAN